Short-term changes in abundance and population structure of dominant pelagic chaetognaths in the Oyashio region during the spring phytoplankton bloom

Yoshiyuki Abe[1], Hiroomi Miyamoto[2], Kohei Matsuno[3], Atsushi Yamaguchi[1] and Ichiro Imai[1]

[1]*Graduate School of Fisheries Sciences, Hokkaido University*

[2]*Tohoku National Fisheries Research Institute, Japan Fisheries Research and Education Agency*

[3]*Australian Antarctic Division, Kingston, Tasmania 7050, Australia*

In the Oyashio region, dominant water masses are switched at the surface layer within a short period during spring (Kono and Sato, 2010). Simultaneously, a large phytoplankton bloom is known to occur at the surface layer, and nearly half of the annual primary production is concentrated during spring (Saito et al., 2002; Liu et al., 2004; Ikeda et al., 2008). These drastic changes in water mass and food condition are expected to strongly affect macrozooplankton population dynamics. Because chaetognaths reportedly undergo reproduction and growth during the spring bloom in the Oyashio region (Terazaki, 1998; Kotori, 1999), evaluation of the effects of the water mass exchange and primary production on the chaetognath community and population dynamics is of special interest. To evaluate the effects of water mass exchange and the spring phytoplankton bloom, we analyzed short-term changes in the population structure, growth rate, gut contents and predation impact of the three dominant chaetognaths (*Eukrohnia hamata*, *Parasagitta elegans* and *Pseudosagitta scrippsae*) in the Oyashio region during March–April 2007. Eleven samples were collected by 0-200 m oblique tow of Bongo nets at night during March 9 to April 30. Effects of water mass exchange were significant for *E. hamata* and *P. elegans*. During the sampling period, significant growth was observed for two dominant species (*E. hamata* and *P. elegans*). Daily growth rate was 39-50 μm day^{-1} for *E. hamata* and 42-101 μm day^{-1} for *P. elegans*. Mean predation impact of *P. elegans* at 0-200 m was 0.194 no. prey consumed m^{-3} day^{-1}, and that of *P. scrippsae* was 0.028 no. prey consumed m^{-3} day^{-1}. These values corresponded with 0-0.097% (*P. elegans*) or 0-0.043% (*P. scrippsae*) of the total zooplankton abundance during the phytoplankton bloom.

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